

REMARKS

In the July 27, 2005 Office Action, the Examiner:

- Rejected claims 1-5, 13, 17-21, 28-30 and 32 under 35 U.S.C. 102(e) as being anticipated by Coyle *et al.* (“Coyle”, U.S. Pat. No. 6,609,221); and
- Rejected claims 6-12 and 14 under 35 U.S.C. 103(a) as unpatentable over Coyle in view of Mak *et al.* (“Mak”, U.S. Pat. No. 6,885,209).

Claim Rejections - 35 U.S.C. § 102

The Examiner has rejected claims 1-5, 13, 17-21, 28-30 and 32 under 35 U.S.C. 102(e) as being anticipated by Coyle. For a proper showing that these claims are anticipated by Coyle, all elements of each rejected claim must be disclosed in the cited reference. The rejected claims contain four independent claims, namely claims 1, 18, 28, and 32. Each of these independent claims have been amended to further distinguish the invention over Coyle.

Coyle, teaches “two alternative methodologies for testing the bus 106.” *See* col. 5, ll. 59-60, and Figures 2A and 2B. The first methodology, as described in relation to Fig. 2A at col. 5, line 60 to col. 6, line 7, teaches transmitting a predetermined sequence of bus testing voltages from a driver end 202 to a receiver end 204 over a bus 205. The receiver end 204 analyzes the received bus signals and reports the results over test output link 212. Alternatively, the receiver end 204 forwards the received stimulus cycles to an external processor for analysis. The receiver end, however, does not send the received stimulus cycles back to the driver end via a different bus for comparison.

The second methodology, as described in relation to Fig. 2B at col. 6, ll. 8-34, teaches sending a predetermined bus testing voltage pattern from the driver end 222 over the bus 205 to a receiver end 224. The receiver end 224 stores the received pattern and forwards it back to the driver end 222. “Accordingly, the pattern traverses the bus 205 twice, once in a forward direction and once, during loopback, in the reverse direction.” *See* col. 6, ll. 14-16. The driver end 222 then analyzes the echo cycles for any errors that may have arisen during transmission and reception of the stimulus cycles, and transmission and reception of the echo signals. Alternatively, the driver end 222 can forward the received echo signals to an external processor for analysis. Here, Coyle teaches that although the driver end is conducting the comparison, the stimulus cycles are compared to the echo cycles and not to

the captured stimulus cycles. As quoted above, the pattern traverses the bus twice, once in a forward direction and once, during loopback, in the reverse direction.

Unlike *Coyle*, each of the independent claims of the present invention require that the test pattern is transmitted from a first component (or controller) along a first interconnect (or interconnect circuitry or interconnection means) and the captured pattern is send back for comparison along a second interconnect (or link) that is distinct to the first interconnect. In other words, the test pattern is transmitted along the interconnect being tested and the pattern is captured and sent back along a different interconnect. The captured test pattern is then compared to the transmitted test pattern at the first component or controller. Accordingly, this claimed “interconnect testing advantageously utilizes the diversity of multiple interconnections between components to identify and isolate interconnect faults within those multiple interconnections.” *See* para. 48 of the present invention.

As shown above, *Coyle* does not disclose, teach or suggest transmitting a test pattern along a first interconnect and thereafter sending the captured pattern back along a second interconnect that is distinct to the first interconnect. *Coyle* also does not disclose, teach, or suggest that the comparison is performed at the component or controller that originally sent the pattern. Accordingly, *Coyle* cannot anticipate any of the independent claims, nor any of their dependant claims, as *Coyle* does not disclose, teach, or suggest each and every one of the limitations of the independent claims.

Claim Rejections - 35 U.S.C. § 103

The Examiner has rejected claims 6-12 and 14 under 35 U.S.C. 103(a) as unpatentable over *Coyle* in view of *Mak*. To establish a prima facie case of obviousness, three basic criteria must be met, namely:

- 1) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings;
- 2) There must be a reasonable expectation of success; and
- 3) The prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure.¹

Mak merely discloses a device for on-chip stress testing of serial links. *See* col. 1, ll. 6-8. As with *Coyle*, *Mak* does not disclose, teach or suggest (1) transmitting a test pattern along a first interconnect and thereafter sending the captured pattern back along a second interconnect that is distinct to the first interconnect; and (2) that the comparison is performed at the component or controller that sent the pattern. For this reason alone, neither *Coyle* nor *Mak*, alone or in combination, teach or suggest all the claim limitations. As such, claims 6-12 and 14 cannot be unpatentable over *Coyle* in view of *Mak*.

Furthermore, with regard to claim 7, the Examiner states that *Mak* teaches transmitting the first pattern via a control bus (column 2, lines 25-27). Despite a careful review of the cited portion of *Mak*, Applicants could find no support for a first pattern being sent over a control bus. Rather, *Mak* teaches transmitting a signal over a regular communication bus.

The Examiner further states that column 10, lines 29-55 teach the elements of claim 8. While *Mak* teaches outputting jittered serial data, *Mak* does not teach loading a second test pattern into the component that received the first test pattern (the memory of claim 8), and thereafter sending the second test pattern to the first component (the controller of claim 8) for comparison. In other words, the second pattern is transmitted in a direction opposite to the

¹ *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

first pattern but over the same interconnect that is being tested. For this reason alone, claim 8 and its dependent claims 9-12 are patentable over *Mak* and *Coyle*, as the combination of *Mak* and *Coyle* does not teach each and every limitation of the claim.

In addition, the Examiner argues that it would have been obvious to combine the teachings of *Coyle* with the teachings of *Mak* to transfer and load patterns using a serial link, as the motivation for making this combination would be to transfer the load patterns quickly and efficiently. The present invention, however, requires the use of multiple interconnections between components to “identify and isolate interconnect faults within those multiple interconnections.” See para. 48. Both *Coyle* and *Mak* teach transmitting signals along a single path that is being tested. As such, one skilled in the art would not have been motivated to use multiple interconnects between two components, where one interconnect is used to transmit a test pattern and the other interconnect is used to transfer the captured test pattern back to the component that sent the original test pattern for comparison. For example, the distinct serial link is used to identify and isolate interconnect faults at the controller, which would not be possible if the captured test pattern were sent back to the controller over the same interconnect over which the test pattern was sent to the memory. As such, it is respectfully submitted that not only does the combination of *Mak* and *Coyle* fail to teach each and every limitation of these claims, but no suggestion or motivation is provided, in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.

New Claims

Applicants have added new claims 33-35 for subject matter previously claimed, but not in independent form. No new matter has been added. New independent claim 35 includes most of the limitations indicated to be allowable by the Examiner from claim 15.

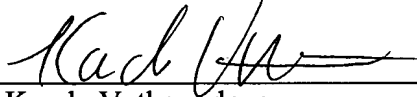
CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is now in a condition for allowance. However, should the Examiner believe that the claims are not in condition for allowance, the Applicant encourages the Examiner to call the undersigned attorney at 650-843-7519 to set up an interview.

If there are any fees or credits due in connection with the filing of this Amendment, including any fees required for an Extension of Time under 37 C.F.R. Section 1.136, authorization is given to charge any necessary fees to our Deposit Account No. 50-0310 (order No. 060809-0139US). A copy of this sheet is enclosed for such purpose.

Respectfully submitted,

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 Kanda Vathanodorn (Reg. No.) 56,607
 for Dion M. Bregman 45,645
MORGAN, LEWIS & BOCKIUS LLP
 2 Palo Alto Square
 3000 El Camino Real, Suite 700
 Palo Alto, California 94306
 (650) 843-4000